REMARKS

An excess claim fee payment letter is submitted herewith for one (1) excess independent claim.

Claims 11-28 are all the claims presently pending in the application. Claims 11-13 have been amended merely to make editorial changes and to obviate the objections to claims 11 and 13. Claims 13, 15, and 22 also are amended to define more clearly the features of the present invention. Claims 23-28 have been added to provide more varied protection for the present invention.

It is noted that the claim amendments are made only for more particularly pointing out the invention, and not for distinguishing the invention over the prior art, narrowing the claims or for any statutory requirements of patentability. Further, Applicant specifically states that no amendment to any claim herein should be construed as a disclaimer of any interest in or right to an equivalent of any element or feature of the amended claim.

Applicant gratefully acknowledges that claims 15-21 are allowed and that claims 12 and 13 would be allowable if rewritten in independent form. However, Applicant respectfully submits that all of the claims are allowable for the reasons set forth below. Thus, allowable claims 12 and 13 have not been rewritten in independent form at this time.

Claims 11, 14, and 22 stand rejected on prior art grounds. Claims 11 and 22 stand rejected under 35 U.S.C. §102(b) as being anticipated by Liu et al. (U.S. Patent No. 4,653,054; hereinafter "Liu"). Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu.

These rejections are respectfully traversed in the following discussion.

I. THE CLAIMED INVENTION

The claimed invention is directed to a method of monitoring a main-clock generated by a main-microcomputer and a sub-clock.

An illustrative, non-limiting embodiment of the invention, as defined by independent claim 11, relates to a method for monitoring a main-clock generated by a main-microcomputer and a sub-clock, wherein the sub-clock includes a smaller number of clock pulses than those of the main-clock. The method includes initializing the main-microcomputer at a time point during a specific period of time beginning when it is detected that the main-microcomputer has stopped supply of the main-clock, and when it is confirmed that the main-microcomputer has not resumed supply of the main-clock during the specific period of time, outputting a switch signal to allow switching from the main-clock to the sub-clock.

In another exemplary embodiment of the invention, as defined by independent claim 22, a method of changing a clock signal from a main-clock supplied by a data processor to a sub-clock includes monitoring the main-clock to detect that the main-clock has stopped, initializing the data processor to attempt to restore the main-clock, and allowing the sub-clock to be supplied instead of the main-clock when the main-clock is not restored during a specific period of time.

In conventional methods, when the main clock is stopped for some cause, the stoppage is dealt with by switching the main-clock to the sub-clock. However, when the main-clock is stopped, the main-clock is switched to the sub-clock which continues operating in such a switched state. Thus, a control or the like using software is separately needed to recover the original state (e.g., see specification at page 2, lines 13-26).

The claimed invention, on the other hand, provides a clock monitoring apparatus capable of automatically initializing a main-clock when the main-clock is stopped and continuing

operation in a state before abnormality when the main-clock is recovered, continuing operation by switching the main-clock to a sub-clock when the main-clock cannot be recovered during a specific period of time and issuing a flag when the sub-clock is also stopped to thereby achieve stable operation of a microcomputer even when the main-clock is stopped (e.g., see specification at page 3, lines 2-10).

II. THE PRIOR ART REJECTIONS

Independent claims 11 and 22 stand rejected under 35 U.S.C. §102(b) as being anticipated by Liu. Applicant respectfully traverses this rejection for at least the following reasons.

Liu specifically discloses that, in operation, if clock pulses are received at both input ports, there is no clock failure indicated, and therefore, clock **A** is provided at the output port (e.g., see Liu at column 4, lines 35-39).

If clock **A** fails, then clock **A** is disabled and clock **B** is enabled. If clock **A** recovers or is restored after the failure of only clock **A**, then clock **B** continues to be provided at the output port. However, if clock **B** fails prior to a failure of clock **A**, then clock **A** continues to be provided at the output port (e.g., see Liu at column 4, lines 39-52).

That is, if clock **B** fails, clock **A** is enabled. However, even if clock **B** subsequently recovers or is restored, clock **A** continues to be provided at the output port (e.g., see Liu at column 4, lines 52-62).

However, if both clocks **A** and **B** fail and clock **A** recovers or is restored first, then clock **A** is provided at the output port. On the other hand, if both clocks **A** and **B** fail and clock **B**

recovers or is restored first, then clock **B** is provided at the output port (e.g., see Liu at column 4, line 63 to column 5, line 2).

As is clear, Applicant respectfully submits that there are features of the claimed invention which are neither disclosed nor suggested by the Liu reference, for several reasons.

Independent claim 1 recites, *inter alia*:

> initializing said main-microcomputer at a time point during a specific period of time beginning when it is detected that said main-microcomputer has stopped supply of said main-clock; and
> when it is confirmed that said main-microcomputer has not resumed supply of said main-clock during said specific period of time, outputting a switch signal to allow switching from said main-clock to said sub-clock (emphasis added).

That is, the switch signal is output when it is confirmed that the main-microcomputer has not resumed supply of the main-clock during the specific period of time. In other words, if the main clock would recover within the specific period of time, then the switch signal would not be output.

In comparison, Liu does not disclose or suggest confirming that the main-clock (analogized by the Examiner to clock **A** in Liu) has not resumed supply of said main-clock during a specific period of time, and then outputting a switch signal to allow switching from the main-clock to the sub-clock. Indeed, the Examiner does not even mention support for this feature in the Liu reference.

Instead, Liu merely discloses that, if clock **A** fails, then clock **A** is disabled and clock **B** is enabled. Moreover, even if clock **A** recovers or is restored after the failure of only clock **A**, then clock **B** continues to be provided at the output port (e.g., see Liu at column 4, lines 49-52).

Thus, Applicant respectfully submits that Liu neither discloses nor suggests confirming that the main-clock has not resumed supply of the main-clock during a specific period of time, and then outputting a switch signal to allow switching from the main-clock to the sub-clock, as claimed.

Moreover, independent claim 11 further recites, *inter alia*, "said sub-clock including a smaller number of clock pulses than those of said main-clock" (emphasis added).

In comparison, Liu does not disclose, suggest, or even mention, that one of the clocks has a smaller (or, for that matter, larger) number of clock pulses than the other.

Instead, Liu merely discloses that many systems "are provided with two clock signals from two different external clock sources, i.e., a redundant clock signal is provided" (e.g., see Liu at column 1, lines 29-32). Also, while Liu states that the clock signal is usually a square wave, Lui does not disclose, suggest, or mention whether one signal has a smaller number of clock pulses than the other (e.g., see Liu at column 2, lines 54-56).

Therefore, Liu does not disclose, suggest, or even mention that the sub-clock includes a smaller number of clock pulses than those of the main-clock, as claimed.

For at least the foregoing reasons, Applicant respectfully submits that Liu clearly does not disclose or suggest all of the features of independent claim 11, and therefore, does not anticipate the claimed invention.

On the other hand, independent claim 22 recites, *inter alia*,

> a method of changing a clock signal from a main-clock supplied by a data processor to a sub-clock, comprising:
> monitoring said main-clock to detect that said main-clock has stopped;
> initializing said data processor to attempt to restore said main-clock; and

> allowing said sub-clock to be supplied instead of said main-clock when said main-clock is not restored during a specific period of time (emphasis added).

As mentioned above, Liu neither discloses nor suggests allowing the sub-clock to be supplied instead of the main-clock when the main-clock is not restored during a specific period of time, as claimed. Instead, Liu switches to the sub-clock regardless of whether the main-clock recovers within a specific period of time, as claimed. This is completely different from the claimed invention which waits a specific period of time to determine if switching to the sub-clock is even necessary. If the main-clock is restored (resumed) during the specific period of time, no switching is ever required.

Thus, for somewhat similar reasons as those set forth above, Applicants submit that Liu neither discloses not suggests all of the features of independent claim 22, and therefore, the rejection of claim 22 also should be withdrawn.

Claim 14 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Liu. However, Applicant respectfully submits that claim 14 is patentable over Liu at least by virtue of its dependency from independent claims 1, and therefore, respectfully requests that the examiner withdraw this rejection.

III. NEW CLAIMS

New claims 23-28 are added to provide more varied protection for the present invention.

Applicant submits that claims 23-28 are patentable for somewhat similar reasons as those set forth above, and respectfully requests allowance of the same.

IV. FORMAL MATTERS AND CONCLUSION

Minor spelling errors are corrected in the specification.

The Examiner respectfully is requested to acknowledge receipt of and accept the formal drawings filed on November 4, 2003 by checking the appropriate boxes (i.e., box 10(a)) in the Office Action Summary.

As mentioned above, Applicant amends Figure 1 herewith to correct a minor spelling error in the sub clock self monitoring portion 203. The Examiner respectfully is requested to acknowledge receipt of and accept the replacement drawings. For the Examiner's convenience, an annotated sheet showing changes made also is submitted herewith.

With respect to the prior co-pending U.S. Application Serial No. 10/242,415, Applicant again hereby incorporates the claim of priority from Japanese Application No. 2001-283579, filed on September 18, 2001, and claimed under 35 U.S.C. §119. The Examiner respectfully is requested to acknowledge Applicant's claim to foreign priority and receipt of the priority document in the co-pending U.S. Application Serial No. 10/242,415 (now U.S. Patent No. 6,670,839 B2) by checking the appropriate boxes (i.e., box 12(a)(2)) in the Office Action Summary.

In view of the foregoing, Applicant submits that claims 11-28, all the claims presently pending in the application, are patentably distinct over the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

The Commissioner is hereby authorized to charge any deficiency in fees or to credit any overpayment in fees to Attorney's Deposit Account No. 50-0481.

Respectfully Submitted,

Date: October 20, 2004

John J. Dresch, Esq.
Registration No. 46,672

Sean M. McGinn
Registration No. 34,386

McGinn & Gibb, PLLC
8321 Old Courthouse Road, Suite 200
Vienna, VA 22182-3817
(703) 761-4100
Customer No. 21254

AMENDMENTS TO THE DRAWINGS:

Figure 1 is amended herewith to correct a minor spelling error in the sub clock self monitoring portion 203. The Examiner respectfully is requested to acknowledge receipt of and accept the replacement drawings and annotated sheet showing changes made.

Attachments: Replacement Sheets (1)

Annotated Sheets Showing Changes (1)

ANNOTATED SHEET

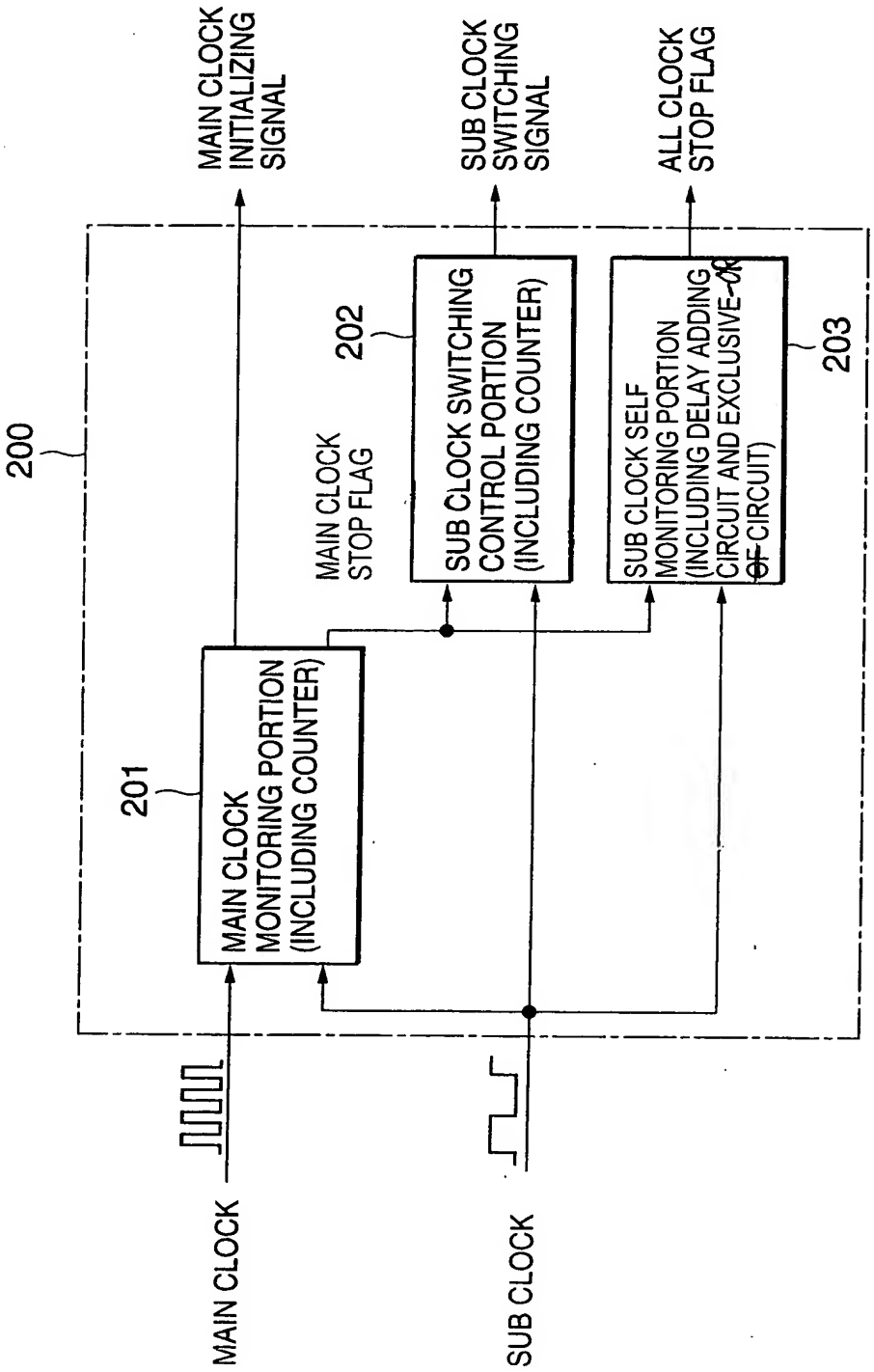

FIG.1